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**Integrated Services Digital Network (ISDN);
Conference call, add-on (CONF) supplementary service
Service description**

ETSI

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Contents

Foreword	5
1 Scope	7
2 Normative references	7
3 Definitions	8
4 Symbols and abbreviations	8
5 Description	8
6 Procedures	9
6.1 Provision and withdrawal	9
6.2 Normal procedures	9
6.2.1 Activation, deactivation and registration	9
6.2.2 Erasure	9
6.2.3 Invocation and operation	9
6.2.3.1 Beginning the conference from the idle state	9
6.2.3.2 Beginning the conference from an active call	9
6.2.3.3 Managing the conference	10
6.2.3.4 Actions available to conferees	10
6.2.3.5 Notification of participants	11
6.2.4 Interrogation	11
6.3 Exceptional procedures	11
6.3.1 Activation, deactivation and registration	11
6.3.2 Erasure	11
6.3.3 Invocation and operation	11
6.3.4 Interrogation	11
7 Intercommunication considerations	12
7.1 Interworking with non ISDNs	12
7.2 Interworking with private ISDNs	12
8 Interaction with other supplementary services	12
8.1 Advice of charge services	12
8.1.1 Charging information at call set-up time	12
8.1.1.1 Conference controller	12
8.1.1.2 Conferees	13
8.1.2 Charging information during the call	13
8.1.2.1 Conference controller	13
8.1.2.2 Conferees	14
8.1.3 Charging information at the end of a call	15
8.1.3.1 Conference controller	15
8.1.3.2 Conferees	16
8.2 Call waiting	16
8.3 Call hold	16
8.4 Explicit call transfer	16
8.5 Number identification services	16
8.5.1 Calling line identification presentation	16
8.5.2 Calling line identification restriction	16
8.5.3 Connected line identification presentation	16
8.5.4 Connected line identification restriction	16
8.6 Closed user group	17
8.7 Completion of calls to busy subscriber	17
8.8 Conference services	17

8.8.1	Conference call, add-on.....	17
8.8.2	Meet-me conference.....	17
8.9	Direct dialling in	17
8.10	Diversion services	17
8.10.1	Call forwarding unconditional.....	17
8.10.2	Call forwarding busy	17
8.10.3	Call forwarding no reply	17
8.10.4	Call deflection	17
8.11	Freephone	18
8.12	Malicious call identification	18
8.13	Multiple subscriber number	18
8.14	Subaddressing	18
8.15	Terminal portability	18
8.16	Three party	18
8.17	User-to-user signalling	18
Annex A (informative): Management of active and held calls		20
A.1	Introduction	20
A.2	Functionality available to the served user controlling more than one call.....	20
History		21

Foreword

This European Telecommunication Standard (ETS) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI).

In accordance with CCITT Recommendation I.130 [1], the following three level structure is used to describe the supplementary telecommunications services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

This standard details the stage 1 aspects (overall service description) for the Conference call, add-on (CONF) supplementary service. The stage 2 and stage 3 aspects are detailed in ETS 300 184 (1992) and ETS 300 185 (1992), respectively.

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1 Scope

This standard defines the stage one of the Conference call, add-on (CONF) supplementary service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators. Stage one is an overall service description from the user's point of view (see CCITT Recommendation I.130 [1]), but does not deal with the details of the human interface itself.

This standard defines the interworking requirements of private ISDNs with the public ISDN.

In addition, this standard specifies the base functionality where the service is provided to the user via a private ISDN.

This standard does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN but does include interworking requirements of other networks with the public ISDN.

Interactions with supplementary services not listed in Clause 8 are outside the scope of this standard.

Charging principles are outside the scope of this standard.

The CONF supplementary service enables a user to participate in, and control, a simultaneous communication involving a number of users.

The CONF supplementary service is applicable to all circuit-switched telecommunications services carrying speech.

This standard is applicable to the stage two and three standards for the ISDN CONF supplementary service. The terms "stage two" and "stage three" are also defined in CCITT Recommendation I.130 [1]. Where the text indicates the status of a requirement, (i.e. as strict command or prohibition, as authorisation leaving freedom, or as a capability or possibility), this shall be reflected in the text of the relevant stage two and three standards.

Furthermore, conformance to this standard is met by conforming to the stage three standard with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for this standard.

2 Normative references

This standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] CCITT Recommendation I.130 (1988): "Method for the characterisation of the telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [2] CCITT Recommendation I.112 (1988): "Vocabulary of terms for ISDNs".
- [3] CCITT Recommendation I.210 (1988): "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [4] CCITT Recommendation Q.9 (1988): "Vocabulary of switching and signalling terms".

3 Definitions

For the purposes of this standard, the following definitions apply:

Integrated Services Digital Network (ISDN): see CCITT Recommendation I.112 [2], § 2.3, definition 308.

Service; telecommunications service: see CCITT Recommendation I.112 [2], § 2.2, definition 201.

Supplementary service: see CCITT Recommendation I.210 [3], § 2.4.

Served user: the user to whom the CONF supplementary service is provided.

Basic access: see CCITT Recommendation Q.9 [4], § 1, definition 1551.

Primary rate access: see CCITT Recommendation Q.9 [4], § 1, definition 1552.

Conference: a call having the capability of involving a number of users who can communicate simultaneously.

Conference controller: the (served) user who invokes the CONF supplementary service and controls the addition and removal of conferees.

Conferee: any user involved in the conference, other than the conference controller.

Party: any user participating in the conference.

Private communication: a communication between the conference controller and another user who may be a past/potential conferee. This communication is entirely separate from the conference.

(Existing) active call: a call for which the connection has been established.

Idle state: in this state, the user invokes the CONF supplementary service without an associated call.

4 Symbols and abbreviations

ISDN	Integrated Services Digital Network
CONF	Conference call, add-on
PSTN	Public Switched Telephone Network

5 Description

The CONF supplementary service shall apply to the basic access and to the primary rate access.

The CONF supplementary service enables a user to participate in and control a simultaneous communication involving a number of users.

The CONF supplementary service can be invoked from the idle state. As a network option, the CONF supplementary service can be invoked from an existing active call.

When the CONF supplementary service is invoked, conference resources are allocated to the served user. In the case of invocation from an active call, this call will be connected to the conference resources.

6 Procedures

6.1 Provision and withdrawal

The CONF supplementary service shall be provided by prior arrangement with the service provider.

The maximum number of parties allowed in a conference shall be a network option.

The CONF supplementary service shall be withdrawn by the service provider upon request by the subscriber or for service provider reasons.

6.2 Normal procedures

6.2.1 Activation, deactivation and registration

Not applicable.

6.2.2 Erasure

Not applicable.

6.2.3 Invocation and operation

The CONF supplementary service can be invoked from the idle state. As a network option, the CONF supplementary service can be invoked from an existing call.

NOTE: It is the responsibility of the user to ensure that the calls are compatible.

6.2.3.1 Beginning the conference from the idle state

The served user can request the CONF supplementary service. The number of parties required in the conference can be indicated in the request.

If the number of parties is not indicated, a maximum value allowed by the network shall be used.

A successful request for the CONF supplementary service shall result in the network reserving conference resources capable of serving the required number of parties.

6.2.3.2 Beginning the conference from an active call

As a network option, the following procedures can be used when a user already has a call on which the connection has been established.

The served user can request the CONF supplementary service, indicating in the request that an existing call shall be connected to the conference. The number of parties required in the conference can be indicated in the request.

If the number of parties is not indicated, the maximum value allowed by the network shall be used.

A successful request for the CONF supplementary service shall result in the network assigning conference resources capable of supporting the required number of parties. The other user in the call indicated in the request for the CONF supplementary service shall be connected to the conference.

If the call indicated in the request was not held by the served user, then the served user shall be connected to the conference. If the call indicated in the request was held by the served user, then the conference shall be held by the served user.

The conferee shall be notified that their call has been added to the conference (see subclause 6.2.3.5).

6.2.3.3 Managing the conference

During the conference, the served user can:

- invoke the call hold supplementary service in order to put their own connection to the conference on hold. Whilst the conference is on hold, the remaining parties in the conference can communicate with each other. The served user can then make a call to a potential conferee;
- create a private communication with one of the parties. The network shall place the conference on hold for the served user. The required party shall be removed from the conference and connected to the served user. The private communication shall be considered as a normal call. Whilst the conference is on hold, the remaining parties can still communicate with each other;
- terminate the entire conference, i.e. all connections to the conference shall be terminated and the conference resources shall be released;
- explicitly disconnect one party from the conference, i.e. the connection between that party and the conference shall be terminated;
- add a conferee, to which a private communication has been established, provided the maximum number of parties is not exceeded. For an incoming call on which the connection has already been established, the conference controller can request that this call be added into the conference using the add-on procedures. As a network option, this request can be accepted or rejected;

After addition of a party, the connection between the served user and the conference shall remain in the state it was prior to the request to add the potential conferee. If the conference was on hold, the served user shall retrieve the conference in order to participate in the conference;

- isolate a conferee. The conferee indicated by the conference controller shall be prevented from communicating with the conference without being removed from it;
- reattach a conferee previously isolated. The conferee can communicate again with the other parties in the conference.

If only one conferee remains, or no conferees remain, as a result of any of the above operations, the conference shall be considered to still be in progress.

6.2.3.4 Actions available to conferees

During the conference any of the conferees can:

- invoke the call hold supplementary service in order to put their own connection to the conference on hold; or
- release their connection to the conference.

If only one conferee remains, or no conferees remain, as a result of any of the above operations, the conference shall be considered to still be in progress.

6.2.3.5 Notification of participants

Each participant in the conference shall be informed by the service provider about the state of their call when a change occurs. When a party is added to the conference, a party is explicitly disconnected from the conference, a party is removed from the conference in order to create a private communication with that party, a party is isolated from the conference, or a party is reattached to the conference, then all the remaining conferees shall be informed.

Conferees shall not be informed when the conference controller holds or retrieves the whole conference.

NOTE: During an interim period of time, some networks may not support the transfer of notifications.

6.2.4 Interrogation

Not applicable.

6.3 Exceptional procedures

6.3.1 Activation, deactivation and registration

Not applicable.

6.3.2 Erasure

Not applicable.

6.3.3 Invocation and operation

If a user tries to invoke the CONF supplementary service and the service provider cannot comply with that request, the service provider shall deny the request and give the served user the reason for rejection.

Possible reasons for rejection are:

- the CONF supplementary service is not subscribed to;
- the requested number of conferees exceeds the maximum number allowed by the network (N);
- resources cannot be allocated.

If the service provider cannot satisfy the request to manipulate the conference (e.g. a request to add a further conferee fails, for example, because the conference has been cleared, the maximum number of conferees allowed has already been reached, or closed user group restrictions are not met) the served user shall receive an indication that the request is rejected, with the reason.

If the served user attempts to invoke the CONF supplementary service using the procedures in subclause 6.2.3.2, and the network can allocate the conference resources, but cannot connect the user to the conference for any reason, then the attempt to invoke the CONF supplementary service shall be rejected and the conference resources shall be released.

In all cases of rejection, the served user's calls shall remain in the same state they were in before the rejected request was received.

6.3.4 Interrogation

Not applicable.

7 Intercommunication considerations

NOTE: In the case of a conference with conferees belonging to different networks (e.g. in different countries or continents), a decrease in quality of service parameters for the speech connection between those conferees may arise, e.g. long transmission delay or unacceptable attenuation of audio signals. A network may provide some precautions, e.g. inhibit addition to the conference of connections from which it is known that the quality of service is near the lower limit for an individual call (e.g. connections via satellites).

7.1 Interworking with non ISDNs

The conferees can belong to the Public Switched Telephone Network (PSTN) or any network supporting speech.

NOTE: If interworking with non-ISDNs occurs, notification to conferees may not be possible.

7.2 Interworking with private ISDNs

A private ISDN can transfer the service invocation request (at service invocation time) to a public ISDN. The conference as seen by the public ISDN shall then be treated as a conference requested by a user directly connected to the public ISDN.

The conferees can belong to any private ISDN.

When a remote user is on a network different from that of the served user (e.g. one user is on a private ISDN and the other user on a public ISDN), indications to the remote user shall be sent to the remote user's network for forwarding to the remote user.

Two conferences in different networks (e.g. one in a private ISDN and the other in a public ISDN) can be connected together. The served user of a conference in one network shall act as a conferee of the conference in the other network.

8 Interaction with other supplementary services

8.1 Advice of charge services

8.1.1 Charging information at call set-up time

8.1.1.1 Conference controller

NOTE 1: Some networks may not support the advice of charge: charging information at call set-up time supplementary service in conjunction with the CONF supplementary service, or may only give part of the information, e.g. due to off-line processing of the charges associated with the CONF supplementary service. In the former case an indication that the advice of charge: charging information at call set-up time supplementary service is not available should be given on invocation of the CONF supplementary service if the advice of charge: charging information at call set-up time supplementary service had been invoked.

Invocation of the CONF supplementary service from the idle state:

The conference controller can invoke the advice of charge: charging information at call set-up time supplementary service at the same time as the CONF supplementary service is invoked. Updated charging rate information for the whole conference shall be given to the conference controller if the charging rate for the conference is changed, i.e. each time the rate changes, the new charge rate shall be given by means of a single indication which shall apply to the whole conference.

Invocation of the CONF supplementary service from an active call:

If the advice of charge: charging information at call set-up time supplementary service has been invoked for the initial call, then it shall be invoked automatically for the whole conference.

If the advice of charge: charging information at call set-up time supplementary service has not been invoked for the initial call, then the conference controller can invoke the advice of charge: charging information at call set-up time supplementary service at the same time as the CONF supplementary service is invoked.

Addition of a call to a conference:

For calls between the conference controller and potential conferees which are outside the conference, the normal procedures for the advice of charge: charging information at call set-up time supplementary service shall apply. When a call for which the advice of charge: charging information at call set-up time supplementary service has been invoked, is added to the conference, then further charging rate information shall not be given for this call.

NOTE 2: Further charging rate information for communication with the new conferee is considered to be part of the charging rate information for the conference.

Creating a private communication with one of the parties:

In this case the private communication shall be considered as a new call between the conference controller and the individual party. If the advice of charge: charging information at call set-up time supplementary service has been invoked for the conference, it shall be invoked automatically for the new call when the private communication is established.

Other operation on the conference:

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.1.1.2 Conferees

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.1.2 Charging information during the call

8.1.2.1 Conference controller

NOTE 1: Some networks may not support the advice of charge: charging information during the call supplementary service in conjunction with the CONF supplementary service, or may only give part of the information, e.g. due to off-line processing of the charges associated with the CONF supplementary service. In the former case an indication that the advice of charge: charging information during the call supplementary service is not available should be given on invocation of the CONF supplementary service if the advice of charge: charging information during the call supplementary service had been invoked.

Invocation of the CONF supplementary service from the idle state:

If the advice of charge: charging information during the call supplementary service is automatically invoked on all calls, or if the conference controller invokes the advice of charge: charging information during the call supplementary service at the same time as the CONF supplementary service is invoked, then cumulative charging information shall be given for the whole conference (i.e. from this time, the subtotal charge shall relate to the whole conference) until the entire conference is terminated.

Invocation of the CONF supplementary service from an active call:

If the advice of charge: charging information during the call supplementary service has been invoked for the initial call, cumulative charging shall be given for this call until the CONF supplementary service is invoked. After the CONF supplementary service has been invoked, cumulative charging information shall be given for the whole conference, including the charges for the initial call until invocation of the CONF supplementary service.

If the advice of charge: charging information during the call supplementary service has not been invoked for the initial call, then the conference controller can invoke the advice of charge: charging information during the call supplementary service at the same time as the CONF supplementary service is invoked. If this occurs, then cumulative charging information shall be given for the whole conference.

Addition of a call to a conference:

For calls between the conference controller and potential conferees which are outside the conference, the normal procedures for the advice of charge: charging information during the call supplementary service shall apply. When a call, for which the advice of charge: charging information during the call supplementary service has been invoked, is added to the conference, then charging information shall be given as if the call was terminated at the moment it was added to the conference.

NOTE 2: Further charges resulting from the communication with the new conferee are considered to be part of the charging for the conference.

Creating a private communication with one of the parties:

In this case the private communication shall be considered as a new call between the conference controller and the individual party. If the advice of charge: charging information during the call supplementary service has been invoked for the conference, it shall be invoked automatically for the new call when the private communication is established.

Cumulative charging information shall be given as if the conference controller had set up a new call which was accepted by the other party at the moment the private communication is established.

Terminating the conference:

When the conference is terminated and the advice of charge: charging information during the call supplementary service has been invoked for the conference, then the overall charges for the conference shall be sent to the conference controller. If the CONF supplementary service was invoked from an active call and the advice of charge: charging information during the call supplementary service has been invoked for that call, then the charging information shall include charges for the initial call.

Other operations on the conference:

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.1.2.2 Conferees

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.1.3 Charging information at the end of a call

8.1.3.1 Conference controller

NOTE 1: Some networks may not support the advice of charge: charging information at the end of the call supplementary service in conjunction with the CONF supplementary service, or may only give part of the information, e.g. due to off-line processing of the charges associated with the CONF supplementary service. In the former case an indication that the advice of charge: charging information at the end of the call supplementary service is not available should be given on invocation of the CONF supplementary service if the advice of charge: charging information at the end of the call supplementary service had been invoked.

Invocation of the CONF supplementary service from the idle state:

If the advice of charge: charging information at the end of the call supplementary service is automatically invoked on all calls, or if the conference controller invokes the advice of charge: charging information at the end of the call supplementary service at the same time as the CONF supplementary service is invoked, then charging information shall be given for the whole conference when the conference is terminated.

Invocation of the CONF supplementary service from an active call:

If the advice of charge: charging information at the end of the call supplementary service has been invoked for the initial call, then it shall be invoked automatically for the conference.

If the advice of charge: charging information at the end of the call supplementary service has not been invoked for the initial call, then the conference controller can invoke the advice of charge: charging information at the end of the call supplementary service at the same time as the CONF supplementary service is invoked.

Addition of a call to a conference:

For calls between the conference controller and potential conferees which are outside the conference, the normal procedures for the advice of charge: charging information at the end of the call supplementary service shall apply. When a call, for which the advice of charge: charging information at the end of the call supplementary service has been invoked, is added to the conference, then charging information shall be given as if the call was terminated at the moment it was added to the conference.

NOTE 2: Further charges resulting from the communication with the new conferee are considered to be part of the charging for the conference.

Creating a private communication with one of the parties:

In this case the private communication shall be considered as a new call between the conference controller and the individual party. If the advice of charge: charging information at the end of the call supplementary service has been invoked for the conference, it shall be invoked automatically for the new call when the private communication is established.

Terminating the conference:

When the conference is terminated and the advice of charge: charging information at the end of the call supplementary service has been invoked for the conference, then the overall charges for the conference shall be sent to the conference controller. If the CONF supplementary service was invoked from an active call and the advice of charge: charging information at the end of the call supplementary service has been invoked for that call, then the charging information shall include charges for the initial call.

Other operations on the conference:

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.1.3.2 Conferees

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.2 Call waiting

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.3 Call hold

Any party involved in a conference (i.e. the conference controller or a conferee) can place their connection to the conference on hold and later retrieve it.

8.4 Explicit call transfer

The conference controller cannot transfer the conference to another user.

Conferees can invoke the explicit call transfer supplementary service in order to transfer their connection to the conference to another user after that connection has been established.

8.5 Number identification services

8.5.1 Calling line identification presentation

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.5.2 Calling line identification restriction

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.5.3 Connected line identification presentation

Conference controller:

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

Conferees:

Conferees shall not receive the identity of a party when that party is added to the conference.

8.5.4 Connected line identification restriction

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.6 Closed user group

When the call involving the first conferee is added to the conference, then the conference shall assume the closed user group of that call.

In order to add a subsequent call to the conference, the closed user group of that call shall be checked against the closed user group of the conference.

8.7 Completion of calls to busy subscriber

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

NOTE: For the determination of user busy, the conference appears the same as a two party call.

8.8 Conference services

8.8.1 Conference call, add-on

A user can be involved as the conference controller separately in two conferences. However, the user cannot add either of these conferences to the other conference.

As a network option, a user can add their connection to a conference in which that user is a conferee to another conference which is controlled by that user.

8.8.2 Meet-me conference

A participant can be involved separately in an (add-on) conference call and a (meet-me) conference.

NOTE: A service provider may take appropriate measures to prevent a connection to a (meet-me) conference from being added to an (add-on) conference. The associated procedures are outside the scope of this standard.

8.9 Direct dialling in

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.10 Diversion services

8.10.1 Call forwarding unconditional

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.10.2 Call forwarding busy

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.10.3 Call forwarding no reply

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.10.4 Call deflection

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.11 Freephone

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.12 Malicious call identification

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.13 Multiple subscriber number

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.14 Subaddressing

No impact, i.e. neither supplementary service shall affect the operation of the other supplementary service.

8.15 Terminal portability

When a terminal manages a conference, the terminal portability supplementary service is not available.

8.16 Three party

Each party in a three-way conversation can be involved separately in a conference.

In order to convert a three-way conversation into a conference, the served user of the three party supplementary service shall terminate the three party supplementary service first and then shall invoke the CONF supplementary service (see subclause 6.2.3.2). Subsequently, the held call can be added to the conference.

As a network option, a user in a three-way conversation, but who is not the served user of the three party supplementary service, can add their connection to the three-way conversation to a conference which is controlled by that user.

8.17 User-to-user signalling

Depending on the level of subscription to the user-to-user signalling supplementary service, a user can activate the user-to-user signalling supplementary service in order to send and receive user-to-user information:

- a) during the establishment of a call; and/or
- b) during a call; and/or
- c) when a call is terminated.

For a conference, only b) shall be available.

User-to-user information in association with call establishment and call termination shall not be available in conjunction with a conference.

NOTE 1: However, on calls which are set up to potential conferees outside the conference, they may be available.

In the following paragraphs, references to the user-to-user signalling supplementary service refer only to that part of the service identified by item b) above.

The user-to-user signalling supplementary service cannot be activated by the conference controller, nor by a conferee, for communication between the participants in the conference.

When a user is added to the conference and the user-to-user signalling supplementary service has been activated on the call between the conference controller and that user, the user-to-user signalling supplementary service shall remain activated for communication between the conference controller and that conferee.

If the user-to-user signalling supplementary service has been activated for communication between the conference controller and a conferee, then when a private communication is created with that party, the user-to-user signalling supplementary service shall remain activated for the private communication.

NOTE 2: Once this private communication is created, it is considered as a separate call and therefore the normal procedures for the user-to-user signalling supplementary service apply.

User-to-user information can be sent by the conference controller to conferees individually, or broadcast to all conferees. User-to-user information can be received by the conference controller from any of the conferees. The network shall identify the conferee sending the user-to-user information to the conference controller.

The same limitations on the amount of user-to-user information which can be transferred between two users shall apply to communications between the conference controller and the conference.

Conferees can send user-to-user information to, and receive user-to-user information from the conference controller. User-to-user information shall not be transferred between the conferees in association with the conference.

Annex A (informative): Management of active and held calls

A.1 Introduction

This Annex describes the management functions available to the user when the user has more than one call. This situation may arise when the user invokes the call hold supplementary service in order to temporarily break the communication on one call and then establish communication with another user, by making another call, answering a waiting call, or retrieving a previously held call.

In addition, the user may invoke some supplementary services, e.g. the explicit call transfer supplementary service, which can involve an active and a held call in the supplementary service. The procedures for such supplementary services are contained within the standards for those supplementary services.

Clause A.2 describes the functions available to users having more than one call in progress.

A.2 Functionality available to the served user controlling more than one call

The served user A, who has at least one call on hold and one active call can:

- a) switch from one call to another call as required (possibly several times), privacy being provided between the calls;

NOTE: There may exist a terminal function which performs the "alternate" procedure (i.e. sequential hold and retrieve functions).
- b) disconnect the active party, the other parties are still held;
- c) disconnect one of the held parties;
- d) establish another call (having first put the active call on hold). When the served user is in control of only held calls the user can establish a further call;
- e) request the service provider to connect two users (i.e. invoke the explicit call transfer supplementary service);
- f) request the service provider to begin a three-way conversation (i.e. invoke the three party supplementary service). The served user can invoke this step only after the call to one party has reached the active state and at least one call is held;
- g) request the service provider to begin the CONF supplementary service, including the active call in conference.

History

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